

CLAIMS

1. An apparatus for recording and/or reproducing data in and/or from memory cards used as recording media, each shaped like a plate and incorporating a memory, said apparatus comprising:

storage means provided in the main body of the apparatus, for storing a plurality of memory cards shaped like a plate, incorporating a memory, and having a label, each so positioned that a part of the label is seen from outside the apparatus; and

transmitting/receiving means for transmitting and receiving data from and to the plurality of memory cards stored in the storage means.

2. An apparatus for recording and/or reproducing data in and/or from memory cards used as recording media, each shaped like a plate and incorporating a memory, said apparatus comprising:

a storage section configured to store a plurality of memory cards, each shaped like a plate and incorporating a memory;

a writing/reading section configured to write and read data into and from the memory cards stored in the storage section; and

transport means for moving the storage section and the writing/reading section relative to each other, thereby to set the writing/reading section at a position where data can be written and read into and from the memory cards stored in the storage section.

3. An apparatus for recording and/or reproducing data in and/or from

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memory cards used as recording media, each shaped like a plate and incorporating a memory, said apparatus comprising:

a plurality of storage means provided on any surface of the main body of the apparatus, for storing a plurality of memory cards shaped like a plate and each incorporating a memory and having a label, each so positioned that a part of the label is seen from outside the apparatus; and

transmitting/receiving means provided in each of the storage means and configured to transmit and receive data from and to the memory card stored in the storage means.

4. The recording and/or reproducing apparatus according to claim 3, further comprising:

transport means for moving the storage means between an insertion/removal position where the memory cards are inserted and removed into and from the storage means, and a writing/reading position where data is written and read into and from the memory cards; and

a plurality of grooves made in any surface of the main body of the apparatus, for receiving the storage means, respectively, that can be moved by the transport means.

5. The recording and/or reproducing apparatus according to claim 4, further comprising:

holding means having a holding member and a cam section and configured to

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holding the memory cards stored in the storage means, said holding member designed to rotate between a support position where the holding member supports the memory cards and a non-support position where the holding member does not support the memory card, and said cam section provided on the main body of the apparatus and designed to rotate the holding member to the support position when the storage means moves to the writing/reading position.

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6. The recording and/or reproducing apparatus according to claim 5, wherein the memory cards are substantially rectangular plates, each having a terminal at one end, for transmitting and receiving data, each storage means set in the groove and able to move has transmitting/receiving means at one end; an insertion guide section having an inclined surface is further provided at the other end of each storage means; the memory card inserted into the storage means is guided by the inclined surface of the insertion guide means, whereby the terminal at one end is connected to the transmitting/receiving means; and the storage means is moved, along with the memory card, from the insertion/removal position to the writing/reading position as the memory card is further inserted, until the memory card is completely held in the storage means.

7. The recording and/or reproducing apparatus according to claim 3, wherein the storage means are arranged in a matrix pattern.

8. The recording and/or reproducing apparatus according to claim 3, wherein the storage means stores the memory cards in staggered fashion such that each

memory card does not cover the label on the memory card located immediately below.

9. The recording and/or reproducing apparatus according to claim 8, wherein a stepwise groove is made in any one surface of the main body and has steps, each holding one storage means, holding the transmitting/receiving means at one end and having an inclined part at the other end; and the memory card inserted into the storage means held in the lowest stage of the stepwise groove is guided along the inclined part to connect the terminal of the memory card to the transmitting/receiving means.

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10. The recording and/or reproducing apparatus according to claim 3, further comprising control means for controlling the reading means provided in a memory card connected to the transmitting/receiving means of any storage means, thereby causing the reading means to access an address in the memory incorporated in the memory card, in accordance with a user's instruction, thereby to read the data stored at the address provided in the memory.

11. The recording and/or reproducing apparatus according to claim 10, wherein the control means controls the writing means provided in a memory card connected to the transmitting/receiving means of any storage means, thereby causing the writing means to access an address in the memory incorporated in the memory card, in accordance with a user's instruction, thereby to write the data at the address provided in the memory.

12. The recording and/or reproducing apparatus according to claim 11,

wherein the control means transfers a command and an address in the memory, to the memory card via the transmitting/receiving means in accordance with the user's instruction, said command designating the reading or writing of data from or into the memory and said address being one at which the reading or writing of data is to be initiated.

13. The recording and/or reproducing apparatus according to claim 12, wherein detecting means is provided to detect the memory cards stored in said plurality of storage means, setting means is provided to set the order in which the memory cards should be subjected to data reproduction, and the control means controls the memory cards such that the memory cards are accessed in the order set by the setting means, thereby to read data from the memory cards.

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14. The recording and/or reproducing apparatus according to claim 13, wherein data-source designating means is provided to designate one of the memory cards stored in the storage means, from which data should be transmitted, and to designate a track stored in the memory provided in the memory card designated, data-destination designating means is provided to designate another of the memory cards stored in the storage means, to which data should be transmitted, and the control means controls the memory cards such that the tracks are read from the memory incorporated in the memory card designated by the data-source designating means and the tracks are written in a vacant region of the memory incorporated in the memory card designated by the data-destination designating means.

15. An apparatus for recording and/or reproducing data in and/or from memory cards used as recording media, each shaped like a plate and incorporating a memory, said apparatus comprising:

a plurality of storage means provided in the main body of the apparatus, for storing a plurality of memory cards shaped like a plate and each incorporating a memory;

transmitting/receiving means provided at one end of the storage means and configured to transmit and receive data from and to the memory cards stored in the storage means; and

support means supporting the storage means, allowing the storage means to rotate between an insertion/removal position where the memory cards are inserted and removed into and from the storage means, and a storage position where the memory cards are held in the storage means.

16. The recording and/or reproducing apparatus according to claim 15, wherein each of the storage means has a recess for holding one end of a memory card shaped like a plate; the transmitting/receiving means has connected terminals provided in the recesses of the storage means and electrically connected to the terminals of the memory cards, thereby to transmit and receive data to and from the memory cards; the support means have support pins, each inserted in a support hole made in a corner of one storage means; and the storage means are mounted on the support pins and rotate such that the major surfaces of the memory cards intersect with the support pins

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at right angles.

17. The recording and/or reproducing apparatus according to claim 16, wherein each of the storage means holds one end of a memory card, thus exposing the label on the memory card to outside.

18. The recording and/or reproducing apparatus according to claim 16, wherein the main body has notches in the corners of the upper surface, the memory cards stored in the storage means are held in the notches while the storage means remain at the storage position, and the memory cards projects from the notches and the labels on the memory card are seen from outside when the storage means are rotated to the insertion/removal position.

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19. The recording and/or reproducing apparatus according to claim 16, wherein a tray section is provided to move the storage means from and into the main body, the support pins of the support means are provided on the tray section, the memory cards held in the storage means project from the tray section and the labels on the memory card are seen from outside when the tray section is ejected and the storage means are rotated to the insertion/removal position.

20. The recording and/or reproducing apparatus according to claim 15, further comprising control means for controlling the reading means provided in a memory card connected to the transmitting/receiving means of any storage means, thereby causing the reading means to access an address in the memory incorporated in the memory card, in accordance with a user's instruction, thereby to read the data

stored at the address provided in the memory.

21. The recording and/or reproducing apparatus according to claim 20, wherein the control means controls the writing means provided in a memory card connected to the transmitting/receiving means of any storage means, thereby causing the writing means to access an address in the memory incorporated in the memory card, in accordance with a user's instruction, thereby to write the data at the address provided in the memory.

22. The recording and/or reproducing apparatus according to claim 21, wherein the control means transfers a command and an address in the memory, to the memory card via the transmitting/receiving means in accordance with the user's instruction, said command designating the reading or writing of data from or into the memory and said address being one at which the reading or writing of data is to be initiated.

23. The recording and/or reproducing apparatus according to claim 22, wherein detecting means is provided to detect the memory cards stored in said plurality of storage means, setting means is provided to set the order in which the memory cards should be subjected to data reproduction, and the control means controls the memory cards such that the memory cards are accessed in the order set by the setting means, thereby to read data from the memory cards.

24. The recording and/or reproducing apparatus according to claim 23, wherein data-source designating means is provided to designate one of the memory

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cards stored in the storage means, from which data should be transmitted, and to designate a track stored in the memory provided in the memory card designated, data-destination designating means is provided to designate another of the memory cards stored in the storage means, to which data should be transmitted, and the control means controls the memory cards such that the tracks are read from the memory incorporated in the memory card designated by the data-source designating means and the tracks are written in a vacant region of the memory incorporated in the memory card designated by the data-destination designating means.

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25. An apparatus for recording and/or reproducing data in and/or from memory cards used as recording media, each shaped like a plate and incorporating a memory, said apparatus comprising:

storage means having a receptacle configured to hold the memory cards, each shaped like a plate and incorporating a memory, and having an opening through which the memory cards can be inserted and removed, a support plate provided in the receptacle to move in the direction in which the memory cards are arranged one above another and configured to support the memory cards, a bias member biasing the support plate toward the opening, and a stopper section configured to inhibit the support plate biased by the bias member from moving; and

a holding section holding the storage means and having data-transmitting/receiving means for transmitting and receiving data to and from the transmitting/receiving section provided at one end of each memory card.

26. The recording and/or reproducing apparatus according to claim 25, wherein the receptacle has a transparent window through one side of every memory card held in the receptacle.

27. The recording and/or reproducing apparatus according to claim 25, wherein each storage means has a first opening in one surface, through which to insert and remove an memory card, and a second opening continuous to the first opening, through which to expose the transmitting/receiving section provided at one end of the memory card.

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28. The recording and/or reproducing apparatus according to claim 25, wherein each storage means has a first opening in one surface, through which to insert and remove an memory card, and a second opening in another surface, through which to expose the transmitting/receiving section provided at one end of the memory card.

29. The recording and/or reproducing apparatus according to claim 25, further comprising a transport mechanism configured to move each storage means between an insertion/removal position where the memory cards are inserted and removed into and from the storage means, and a storage position where the memory cards are held in the storage means.

30. The recording and/or reproducing apparatus according to claim 29, further comprising a cover that opens and closes the holding section as the storage means is moved.

31. The recording and/or reproducing apparatus according to claim 25,

further comprising control means for controlling the reading means provided in a memory card connected to the transmitting/receiving means of any storage means, thereby causing the reading means to access an address in the memory incorporated in the memory card, in accordance with a user's instruction, thereby to read the data stored at the address provided in the memory.

32. The recording and/or reproducing apparatus according to claim 31, wherein the control means controls the writing means provided in a memory card connected to the transmitting/receiving means of any storage means, thereby causing the writing means to access an address in the memory incorporated in the memory card, in accordance with a user's instruction, thereby to write the data at the address provided in the memory.

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33. The recording and/or reproducing apparatus according to claim 32, wherein the control means transfers a command and an address in the memory, to the memory card via the transmitting/receiving means in accordance with the user's instruction, said command designating the reading or writing of data from or into the memory and said address being one at which the reading or writing of data is to be initiated.

34. The recording and/or reproducing apparatus according to claim 33, wherein detecting means is provided to detect the memory cards stored in said plurality of storage means, setting means is provided to set the order in which the memory cards should be subjected to data reproduction, and the control means

controls the memory cards such that the memory cards are accessed in the order set by the setting means, thereby to read data from the memory cards.

35. The recording and/or reproducing apparatus according to claim 34, wherein data-source designating means is provided to designate one of the memory cards stored in the storage means, from which data should be transmitted, and to designate a track stored in the memory provided in the memory card designated, data-destination designating means is provided to designate another of the memory cards stored in the storage means, to which data should be transmitted, and the control means controls the memory cards such that the tracks are read from the memory incorporated in the memory card designated by the data-source designating means and the tracks are written in a vacant region of the memory incorporated in the memory card designated by the data-destination designating means.

36. An apparatus for recording and/or reproducing data in and/or from memory cards used as recording media, each shaped like a plate and incorporating a memory, said apparatus comprising:

a plurality of holders configured to hold the memory cards, respectively, each shaped like a plate and incorporating a memory;

a holding section in which the holders are provided to hold the memory cards;

a writing/reading section configured to write and read data into and from the memory cards held by the holders; and

transport means for moving the holding section or the writing/reading section

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such that the memory card held in one holder opposes the writing/reading section.

37. The recording and/or reproducing apparatus according to claim 36, wherein the holding section holds the holders, one above another, in the direction that intersects at right angles with the major surfaces of the memory cards held in the holders, the transport means moves the holding section or the writing/reading section in the direction the holders are held one above another, causing making the memory card held in one holder to oppose the writing/reading section.

38. The recording and/or reproducing apparatus according to claim 37, wherein the writing/reading section has a recess for holding one end of a memory card held in the holder and connection terminals provided in the recess to contact the terminals provided at one end of the memory card inserted, and transport means is provided to move the holder toward the writing/reading section or the writing/reading section toward the holder, thereby to insert one end of the memory card into the recess of the writing/reading section and to connect the terminals at one end of the memory card to the connection terminals.

39. The recording and/or reproducing apparatus according to claim 38, further comprising ejecting means for ejecting one of the holders from the holding section.

40. The recording and/or reproducing apparatus according to claim 38, wherein a transmitting/receiving section is provided at one end of each memory card, for transmitting and receiving data to and from the writing/reading section; the holding

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section has a plurality of grooves arranged in a circumferential direction, said grooves serving as the holders, holding the memory cards in such position that the receiving/transmitting sections lie near an inner periphery and the major surfaces of the memory cards oppose one another; the receiving/transmitting section of each memory card is located at a center part of the holding section; and the transport means rotates the holding means or the writing/reading section, causing the memory card held in one groove to oppose the writing/reading section.

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41. The recording and/or reproducing apparatus according to claim 36, further comprising control means for controlling the transport means in accordance with a user's instruction, such that the transport means moves the writing/reading section or the memory card held in any holder, thereby causing the memory card to oppose the writing/reading section, and that writing/reading section accesses an address in the memory incorporated in the memory card, thereby to read the data stored at the address provided in the memory.

42. The recording and/or reproducing apparatus according to claim 41, wherein the control means controls the transport means in accordance with a user's instruction, such that the transport means moves the writing/reading section or the memory card held in any holder, thereby causing the memory card to oppose the writing/reading section, and that writing/reading section accesses an address in the memory incorporated in the memory card, thereby to write data at the address provided in the memory.

43. The recording and/or reproducing apparatus according to claim 42, wherein the control means transfers a command and an address in the memory, to the memory card via the writing/reading section in accordance with the user's instruction, said command designating the reading or writing of data from or into the memory and said address being one at which the reading or writing of data is to be initiated.

44. The recording and/or reproducing apparatus according to claim 43, wherein detecting means is provided to detect the memory cards stored in a plurality of storage means, setting means is provided to set the order in which the memory cards should be subjected to data reproduction, and the control means controls the memory cards such that the memory cards are accessed in the order set by the setting means, thereby to read data from the memory cards.

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45. The recording and/or reproducing apparatus according to claim 44, wherein data-source designating means is provided to designate one of the memory cards stored in the holders, from which data should be transmitted, and to designate a track stored in the memory provided in the memory card designated, data-destination designating means is provided to designate another of the memory cards stored in the holders, to which data should be transmitted, and the control means controls the writing/reading section such that the tracks are read from the memory incorporated in the memory card designated by the data-source designating means and the tracks are written in a vacant region of the memory incorporated in the memory card designated by the data-destination designating means.